

1. After they have been cleaned, visually inspect the components of the assemblies for excessive wear. Any burrs, pitting or roughness on the teeth of a gear will cause wear on the mating gear. Minor roughness can be cleaned up with an oilstone but there's little point in attempting to remove deep scars.

NOTE

Defective gears should be replaced. It's a good idea to replace the mating gear on the other shaft even though it may not show as much wear or damage.

2. Carefully check the engagement dogs. If any are chipped, worn, rounded or missing, the affected gear must be replaced.
3. Rotate the transmission bearings in the crankcases by hand. Refer to **Figure 78**. Check for roughness, noise and radial play. Any bearing that is suspect should be replaced. Refer to *Bearing and Oil Seal Replacement* in Chapter Four.
4. If the transmission shafts are satisfactory and are not going to be disassembled, apply assembly oil or engine oil to all components and reinstall them in the crankcase as described in this chapter.

NOTE

If disassembling a used, well run-in transmission for the first time by yourself, pay particular attention to any additional shims that may have been added by a previous owner. These may have been added to take up the tolerance of worn components and must be reinstalled in the same position since the shims have developed a wear

pattern. If new parts are going to be installed these shims may be eliminated. This is something you will have to determine upon reassembly.

3-SPEED TRANSMISSION AND INTERNAL SHIFT MECHANISM (70 CC)

The 3-speed transmission shown in **Figure 79** is used on the 1973-1981 ATC70.

Removal/Installation

1. Remove the engine and split the crankcase as described in Chapter Four.
2. Pull the shift fork shaft assembly, main shaft assembly and the countershaft assembly up and out of the crankcase as an assembly.
3. Disassemble and inspect the shift forks and transmission assemblies as described in this chapter.
4. Coat all bearings and sliding surfaces of both transmission assemblies and the shift drum with assembly oil.
5. Install the 2 transmission assemblies and the shift drum assembly by meshing them together in their proper relationship to each other. Install them in the left-hand crankcase. Hold the thrust washer on the main shaft in place with your fingers (**Figure 80**). Make sure it is still positioned correctly after the assemblies are completely installed. After both assemblies are installed, tap on the end of both shafts and the shift drum assembly (**Figure 81**) with a plastic or rubber mallet to make sure they are completely seated.

NOTE

If the thrust washer on the end of the main shaft does not seat correctly it will hold the transmission shaft up a little and prevent the crankcase halves from seating completely.

6. Spin the transmission shafts and shift through the gears using the shift drum. Make sure you can shift into all gears. This is the time to find that something may be installed incorrectly—not after the crankcase is completely assembled.

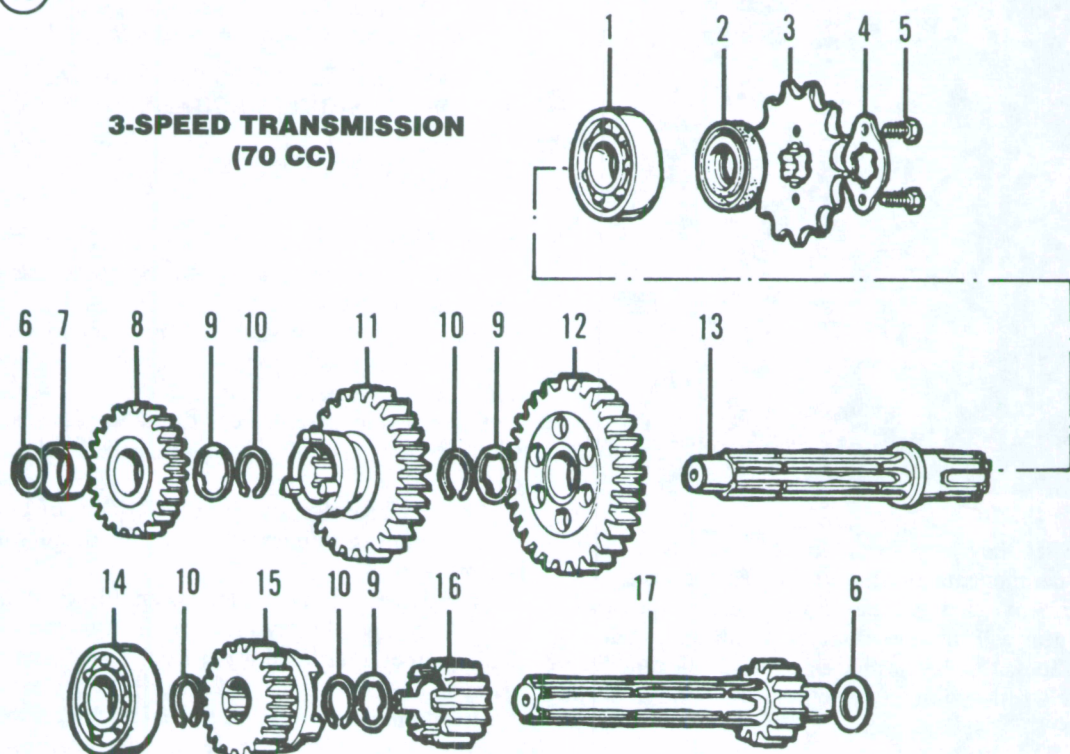
NOTE

This procedure is best done with the aid of a helper as the assemblies are loose and won't spin very easily. Have the helper spin the transmission shaft while you turn the shift drum through all the gears.

7. Make sure that the thrust washer (**Figure 82**) is installed on the countershaft.
8. Assemble the crankcase as described in Chapter Four.

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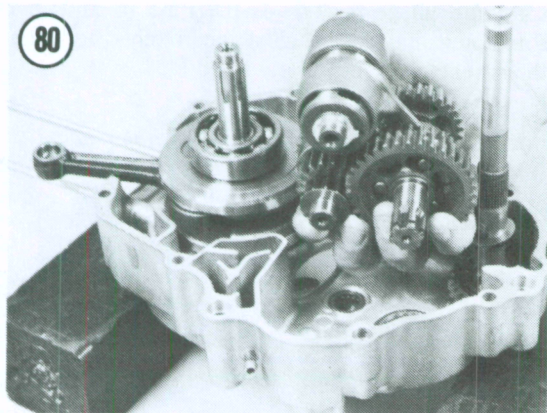
3-SPEED TRANSMISSION (70 CC)



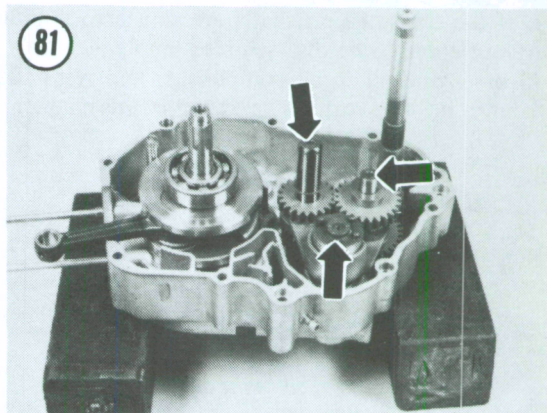
1. Bearing
2. Oil seal
3. Drive sprocket
4. Holding plate
5. Bolt
6. Washer
7. Countershaft 3rd gear spacer
8. Countershaft 3rd gear
9. Splined washer

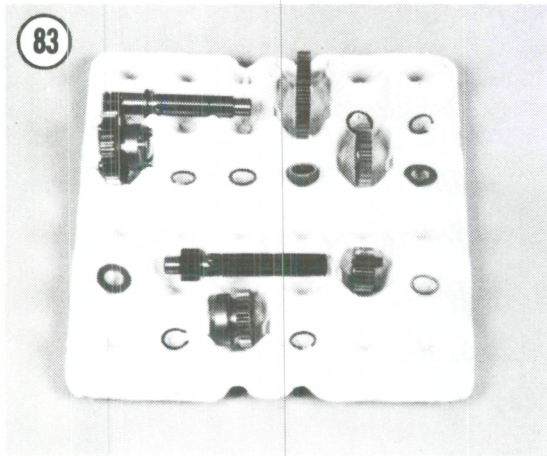
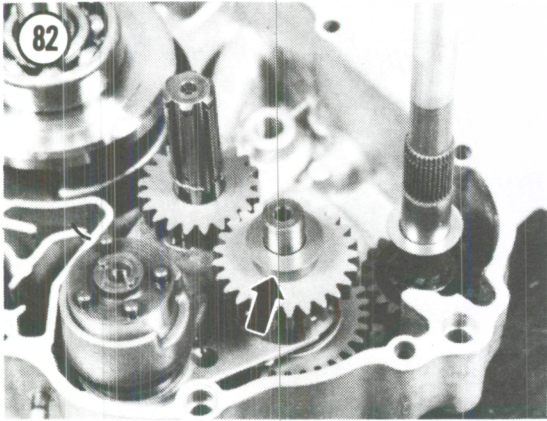
10. Circlip
11. Countershaft 2nd gear
12. Countershaft 1st gear
13. Countershaft
14. Bearing
15. Main shaft 3rd gear
16. Main shaft 2nd gear
17. Main shaft/1st gear

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81





Main Shaft Disassembly/Inspection/Assembly

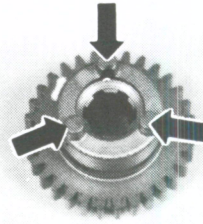
Refer to **Figure 79** for this procedure.

NOTE

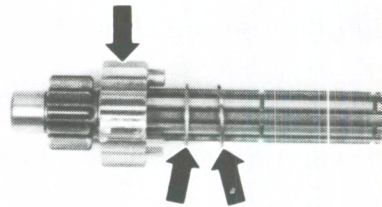
A helpful "tool" that should be used for transmission disassembly is a large egg flat (the type that restaurants get their eggs in). As you remove a part from the shaft set it in one of the depressions in the same position from which it was removed (**Figure 83**). This is an easy way to remember the correct relationship of all parts.

1. Clean the shaft as described under *Preliminary Transmission Inspection (All Models)* in this chapter.
2. Remove the circlip and slide off the 3rd gear.
3. Remove the circlip and splined washer.
4. Slide off the 2nd gear.
5. From the other end of the shaft, remove the thrust washer.

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85



6. Check each gear for excessive wear, burrs, pitting or chipped or missing teeth. Make sure the lugs (**Figure 84**) on the gears are in good condition.

NOTE

Defective gears should be replaced. It is a good idea to replace the mating gear on the countershaft even though it may not show as much wear or damage.

NOTE

The 1st gear is part of the shaft. If the gear is defective, the shaft must be replaced.

7. Make sure that all gears slide smoothly on the main shaft splines.

NOTE

It is a good idea to replace all circlips every other time the transmission is disassembled to ensure proper gear alignment.

8. Slide on the 2nd gear and install the splined washer and circlip (**Figure 85**).

9. Slide on the 3rd gear and install the circlip (**Figure 86**).
10. Onto the other end of the main shaft, slide on the thrust washer (**Figure 87**).
11. Before installation, double-check the placement of all gears (**Figure 88**). Make sure all circlips are seated in the main shaft grooves.

Countershaft Disassembly/Inspection/Assembly

Refer to **Figure 79** for this procedure.

NOTE

*Use the same large egg flat (used on the main shaft disassembly) during the countershaft disassembly (**Figure 83**). This is an easy way to remember the correct relationship of all parts.*

1. Clean the shaft as described under *Preliminary Transmission Inspection (All Models)* in this chapter.
2. Remove the thrust washer, the 3rd gear spacer and the 3rd gear.
3. Slide off the splined washer and remove the circlip.
4. Slide off the 2nd gear.
5. Remove the circlip and splined washer and slide off the 1st gear.
6. Check each gear for excessive wear, burrs, pitting or chipped or missing teeth. Make sure the lugs on the gears are in good condition.

NOTE

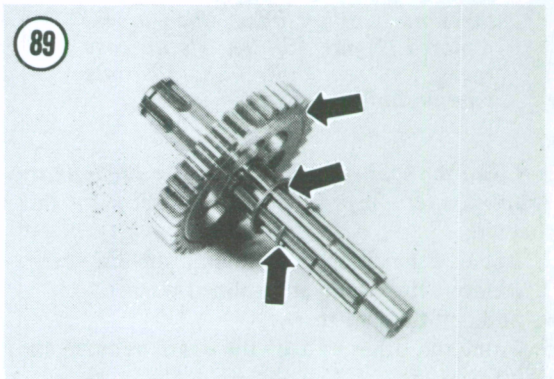
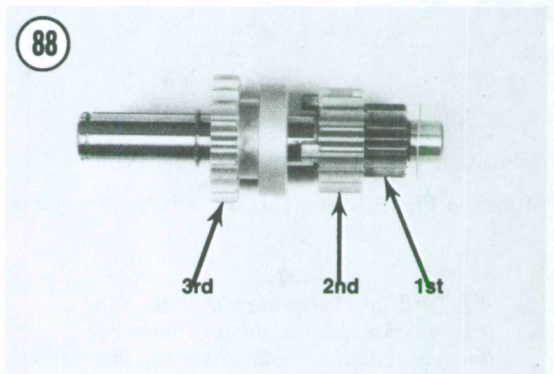
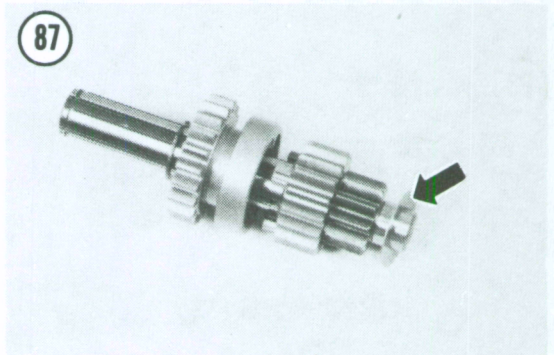
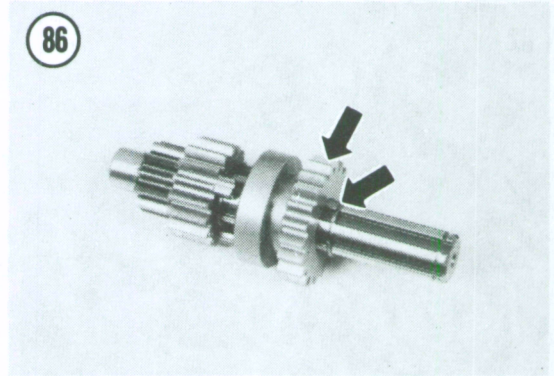
Defective gears should be replaced. It is a good idea to replace the mating gear on the main shaft even though it may not show as much wear or damage.

7. Make sure that all gears slide smoothly on the countershaft splines.

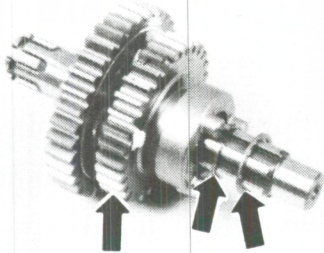
NOTE

It is a good idea to replace all circlips every other time the transmission is disassembled to ensure proper gear alignment.

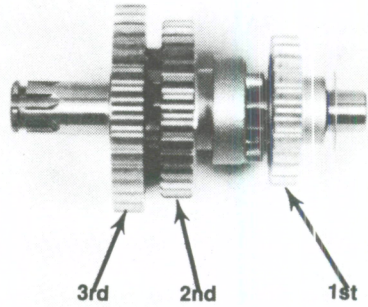
8. Slide on the 1st gear, circlip and splined washer (**Figure 89**).
9. Slide on the 2nd gear, circlip and thrust washer (**Figure 90**).
10. Slide on the 3rd gear (**Figure 91**).
11. Slide on the collar and the thrust washer (**Figure 92**).
12. Before installation, double-check the placement of all gears (**Figure 93**). Make sure the circlips are seated correctly in the countershaft groove.



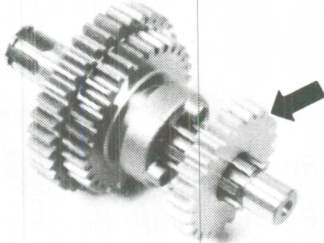
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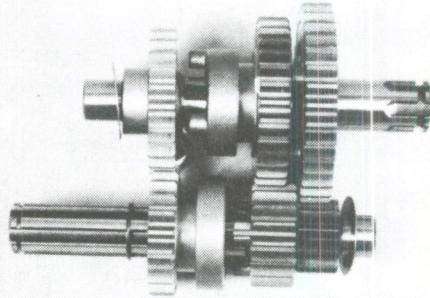
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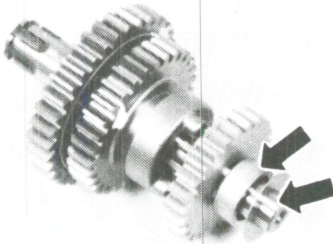
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94



92



NOTE

After both transmission shafts have been assembled, mesh the 2 assemblies together in the correct position (Figure 94). Check that all gears meet correctly. This is your last check prior to installing the assemblies into the crankcase; make sure they are correctly assembled.

4-SPEED TRANSMISSION AND INTERNAL SHIFT MECHANISM (70 CC)

The 4-speed transmission shown in Figure 95 is used on the 1982-on ATC70.

Removal/Installation

1. Remove the engine and split the crankcase as described in Chapter Four.

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